



# 4<sup>th</sup> National Schools Symposium

October 26-28, 2003

**Tom Ellis, Tandus**

# Indoor Air Quality



Floorcoverings are only one of several components in the interior product selection process that affects IAQ.

# The Total Learning Environment



## Daylighting

- How do your flooring specifications impact **SIGHT** learning?

## Acoustics

- Have you considered **ACOUSTICS** in your flooring specifications?

## Thermal

- Can your flooring improve **THERMAL** comfort & **ENERGY** savings?

## Maintenance

- Does your flooring protect the overall **HEALTH** of the occupants?

## IAQ

- Is **LINK ENGINEERING** part of your overall evaluation of flooring?

## Sustainable

- What **SUSTAINABLE** criteria meets the needs of the application?

# Flooring Options



Wood



Linoleum,  
Sheet Vinyl,  
Rubber



Terrazzo



VCT



Carpet

- Action Bac
- Latex Unitary Bac
- Hot Melt
- Woven
- Polyurethane
- Polypropylene
- Urethane
- Cushion Vinyl
- Hard Plate Vinyl

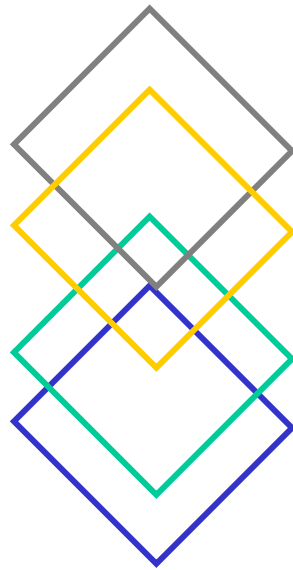


- Quality compliance
- Meets the application
- Meaningful warranty

- Resilient
- Not topically applied

- Impermeable to moisture
- Impermeable to microbial penetration
- Water proof seams

- No “off-gassing” or curing time
- No seams or seam degradation



**SURFACE**

**CONSTRUCTION**

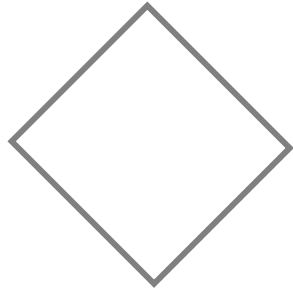
**BACKING**

**INSTALLATION**

# Link Engineered for Schools ??



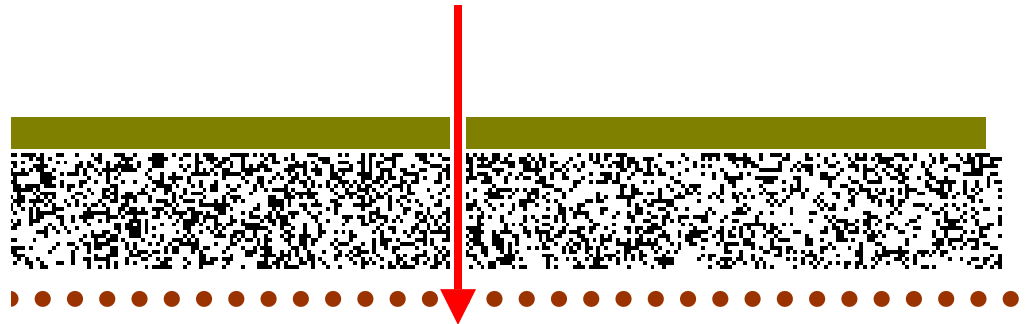
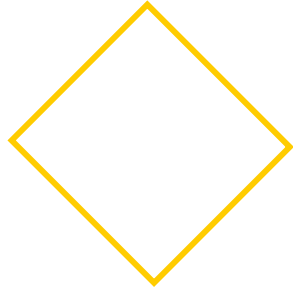
**SURFACE**



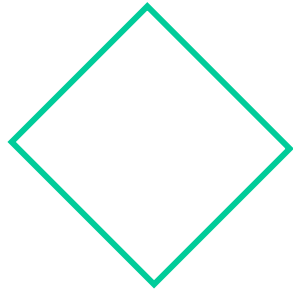
Hard Surface

VCT

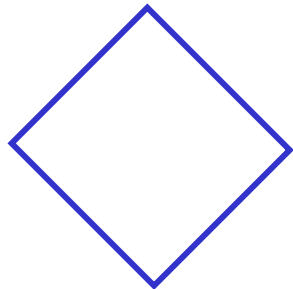
**CONSTRUCTION**



**BACKING**



**INSTALLATION**





# VCT

- ⊗ *Applied finish*
- ⊗ *Open Seams*
- ⊗ *Porous*



appropriate finish



inappropriate finish



# VCT Maintenance Equipment







# Link Engineered for Schools !

## Preferred Hard Surface

Terrazzo

Linoleum

Sheet Vinyl

Ceramic Tile

Rubber

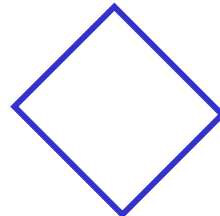


▶ ***Resilient Surface***  
*(not topically applied)*

▶ ***Waterproof***

▶ ***Waterproof Seams***

▶ ***Non Porous***  
*(impermeable)*



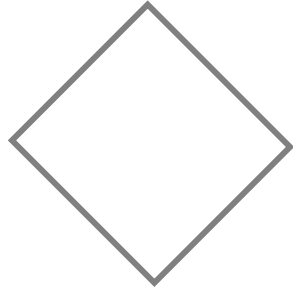
▶ ***Low VOCs***

INSTALLATION

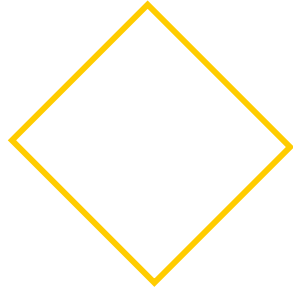


# Link Engineered for Schools ??

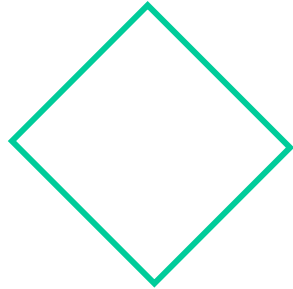
**SURFACE**



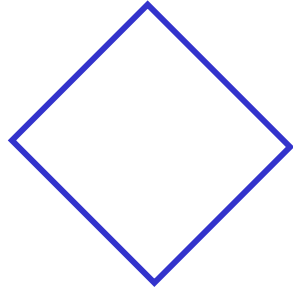
**CONSTRUCTION**



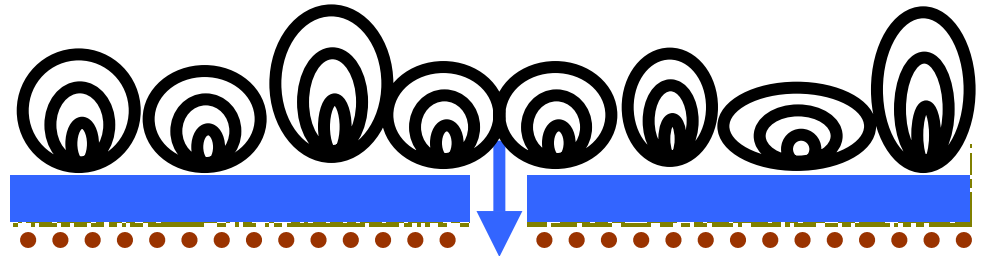
**BACKING**



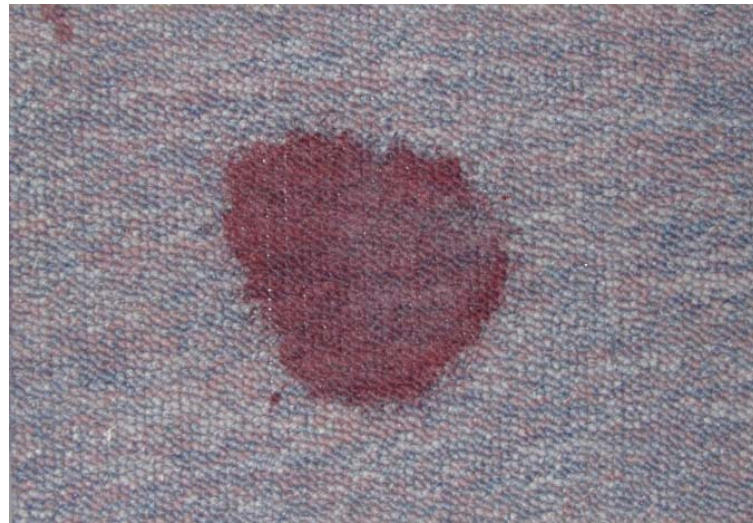
**INSTALLATION**



Flow Through Broadloom

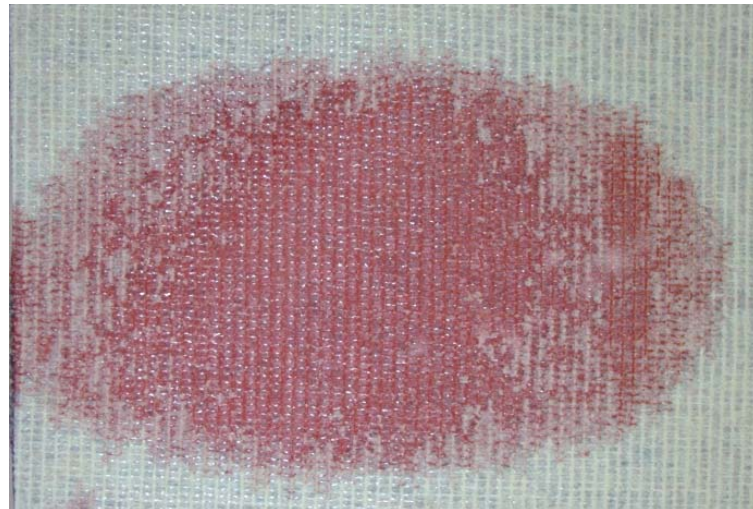


# Flow Through Backing



10"

**Front**



10"

**Back**



# Flow Through

Latex “Flow Through” 6 Years

← transitions strip (cannot bond the seams)

# Impermeable

Closed cell vinyl cushion 26 Years



# **IMPERMEABLE:**

- **Waterproof**
  - **Waterproof seams**
  - **NO open seams**  
(6' vinyl cushion broadloom)
  - **NO Modular Tiles**
  - **Improved Maintenance**
- .....Improved IAQ**

**Closed cell vinyl cushion  
3 Years After Flooding**





# Closed Cell Vinyl Cushion

Is  
Impermeable



“To solve IAQ and mold issues, designers must design buildings with materials that can sustain moisture breaches without catastrophic results.

Prevention, rather than repair, is the key to successful building health.”

*Mold-Resistive Construction, Christopher Huckabee, AIA,  
School Planning & Management, Aug. 2003*

- British Spill Test (E)  
(“No penetration after 24 hours.”)  
**DOES NOT ACCOUNT FOR IMPACT or SPILLS at SEAMS**
- Moisture Penetration by Impact  
(“No penetration after 10,000 impacts.”)
- Moisture Penetration at Seam Test  
(“No penetration after 10,000 impacts.”)
- Phillips Chair Caster Test at Seam  
(“No seam degradation after 50,000 cycles.”)

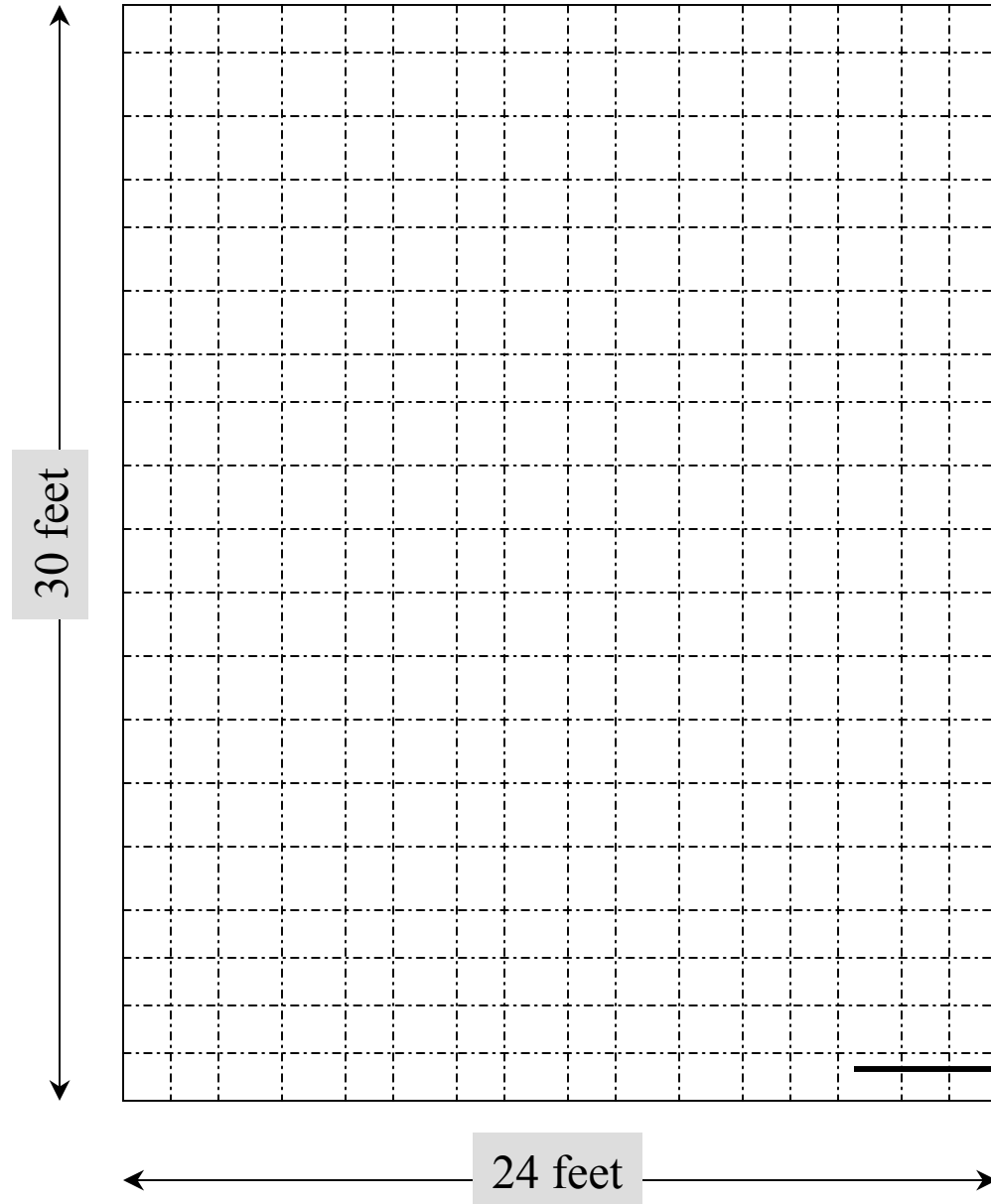
**When Good  
Modular Tiles  
...Go Bad**

**OPEN SEAMS**

**= 906 Linear Feet  
(18" Tile)**

**PER  
CLASSROOM**

**Typical Classroom**



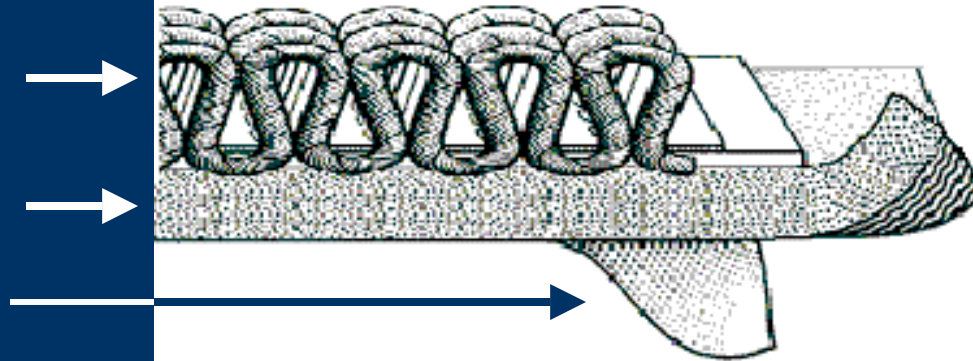
Meets the Application

Link Engineering



## Vinyl Cushion Tufted **T**extile

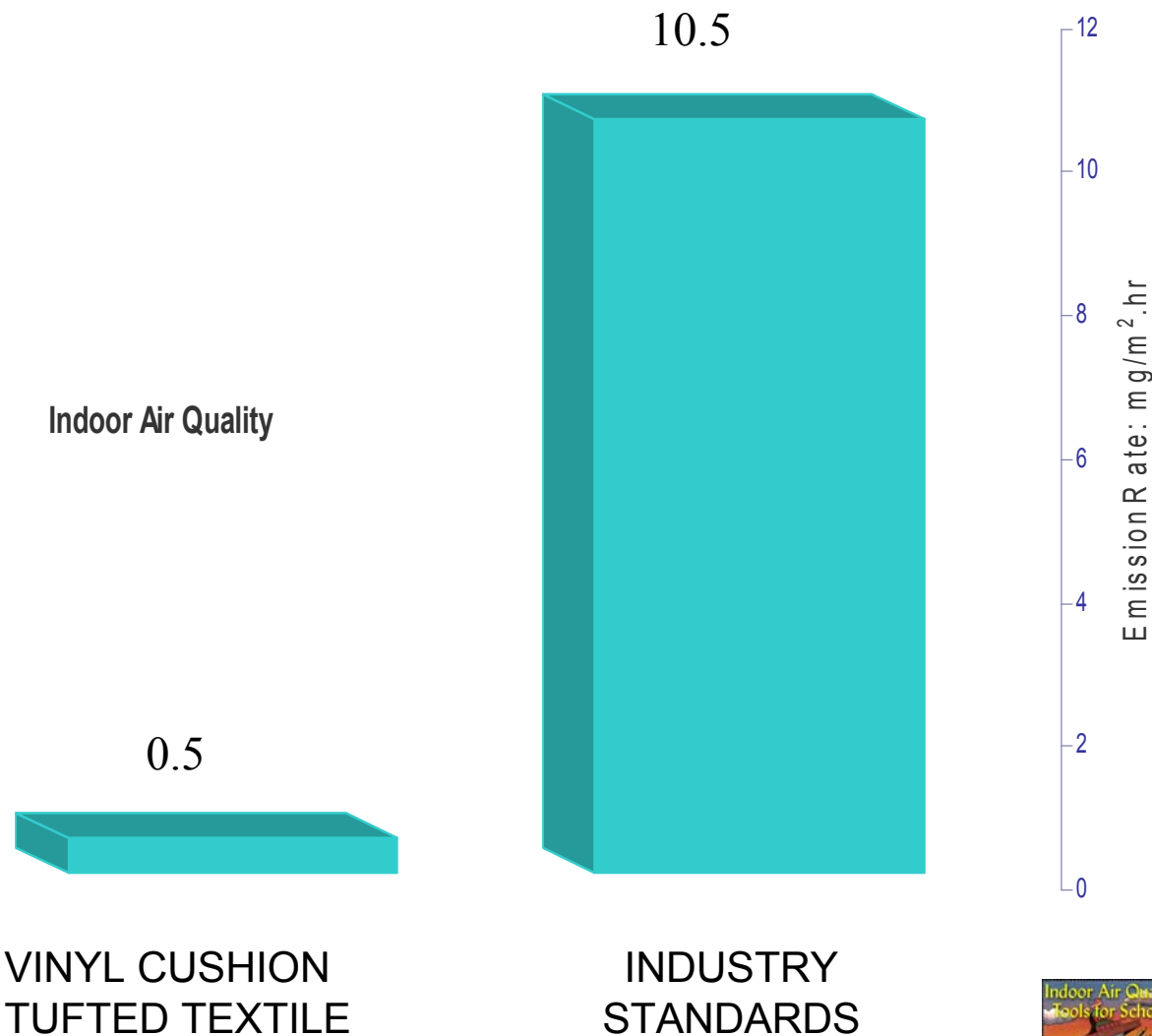
- ✓ Resilient  
(Very low profile)
- ✓ Non-Flow Through  
(water proof seams)
- ✓ No Odors  
(Peel & Stick Adhesive)



# Indoor Air Quality



## LINK ENGINEERED VOC EMISSIONS COMPARED TO INDUSTRY STANDARD







# Indoor Air Quality

Phoenix Children's Hospital  
Neonatal Unit, Phoenix, AZ



# When you can't breathe, nothing else matters.

## NEWS

From the American Lung Association

CONTACT: Nancy Whitlock at (727) 347-6133 or 1-800-771-5863.

November 2, 2002

**For Immediate Release**

### **American Lung Association Celebrates Opening Of Breathe Easy Office® - Clean Air Building Prototype**

Grand Opening Ceremonies for the American Lung Association's Breathe Easy Office® will be held Saturday, November 2, beginning with a ribbon-cutting at 12:30 p.m. This innovative healthy office building prototype is the new corporate headquarters of the ALA's Gulfcoast affiliate.

The Grand Opening is sponsored by Carrier Corporation, C&A Floorcoverings, GlaxoSmithKline and Icyne Inc., with hospitality provided by Panera Bread.

The Breathe Easy Office is a landmark facility with the latest technology and safest energy systems especially designed to ensure clean indoor air. With most Americans spending 90 percent of their time indoors, buildings made with allergenic materials and poor air ventilation can cause serious health risks, especially for those with lung disease.

**This building was designed and constructed as an active prototype for the business community. All products used in its construction have been carefully selected to create an allergen-free, chemical-free environment that provides the cleanest air possible and protects the health of all who visit it.**

A prime building feature is the five-stage air filtration system, which provides heating or cooling; dehumidification to eliminate dust mites, a common allergen; ultraviolet irradiation for bacterial and viral control; and large and small particle filtration to ensure the cleanest air.

**This building was designed and constructed as an active prototype for the business community. All products used in its construction have been carefully selected to create an allergen-free, chemical-free environment that provides the cleanest air possible and protects the health of all who visit it.**



# Indoor Air Quality



## The Carpet and Rug Institute

310 Holiday Avenue, P.O. Box 2048, Dalton, Georgia 30722  
Phone (706) 428-2105 Fax (706) 278-8835

September 26, 2001

To: Sharon Booker, Commodity Specialist  
GSA

From: Ken McIntosh, Technical Director

Subject: Carpet - Minimum Face Weight Specifications

A minimum face weight for carpet has historically been specified with the intent of increasing the performance of carpet.

With tighter gauge tufting machines (1/10 gauge and above), finer denier yarns, and improved backing systems, there are carpet product types for which requiring increased face weight does not make the product perform better, could actually detract from performance, and is wasteful of natural resources.

CRI recommends that there be no face weight requirements on "structured back" carpets that meet or exceed 4000 minimum density produced with fine denier yarns on 1/10, or tighter, gauge production equipment.

## Subject: Carpet - Minimum Face Weight Specifications

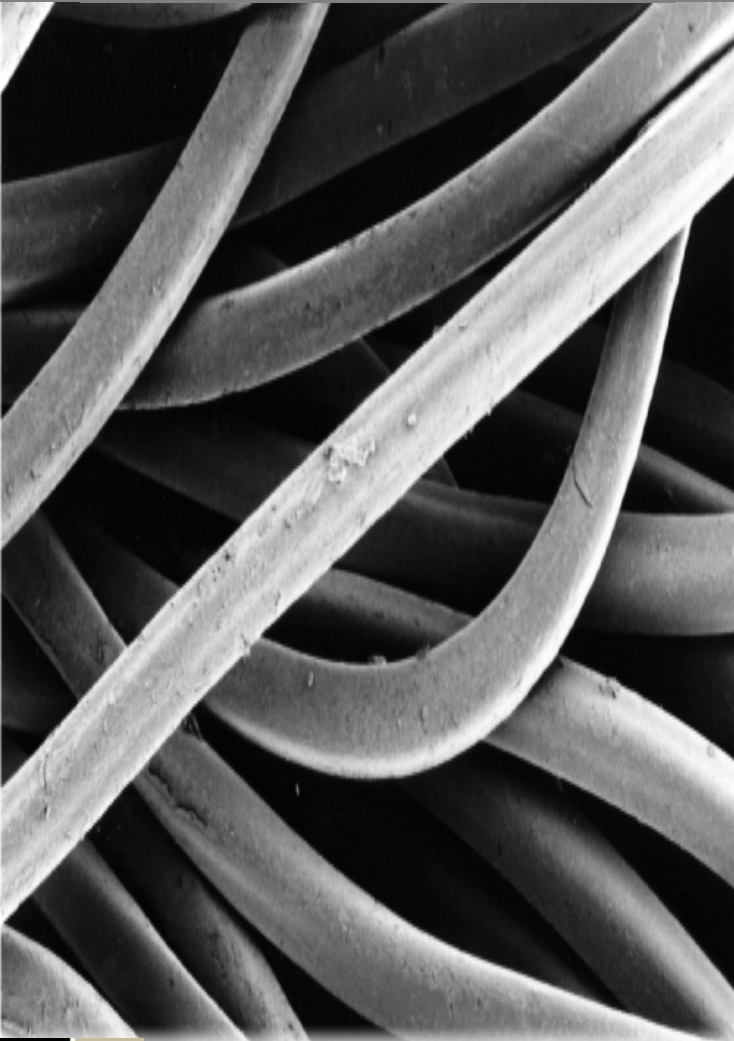
**A minimum face weight for carpet has historically been specified with the intent of increasing the performance of carpet.**

**.....increased face weight does not make the product perform better, could actually detract from performance, and is wasteful of natural resources.**

**CRI recommends that there be no face weight requirements on "structured back" carpets...**



705,000 Foot Traffics



- A Resilient and a Permanent Surface Finish
  - Not topically applied
  - Will not leach off
  - Will not wear off
  - Efficacy not reduced by proper cleaning
  - Non corrosive

**All Antimicrobials are EPA Registered Pesticides**

**No antimicrobial can substitute for proper care and cleaning**



# Indoor Air Quality

ONLY USE:

✓ Non-Resoiling Cleaners



No Detergent Residue



Detergent Residue



# Sustainable Design



- Life cycle cost
- Source reduction
- Appropriate Application
- Recyclable
- Recycled content
- Meets *FTC Guidelines*
- *Third Party Certification*

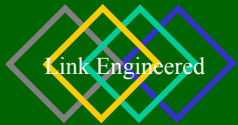




# Prospect Valley Elementary School Jefferson County School District 35 years ago ... and counting

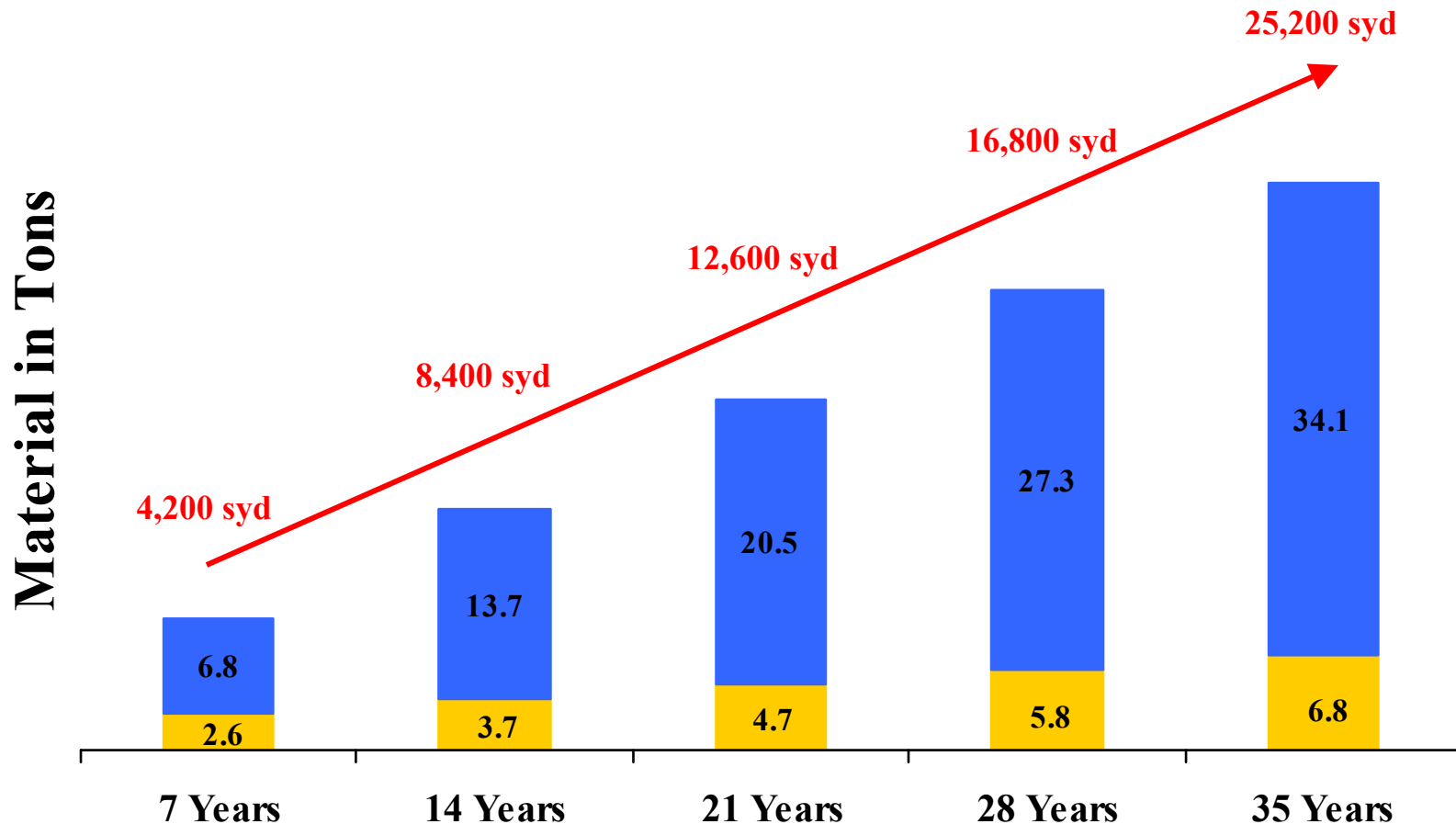
## Cumulated Savings





# Prospect Valley Elementary School Jefferson County School District 35 years ago ... and counting

## Material Saved From Landfills

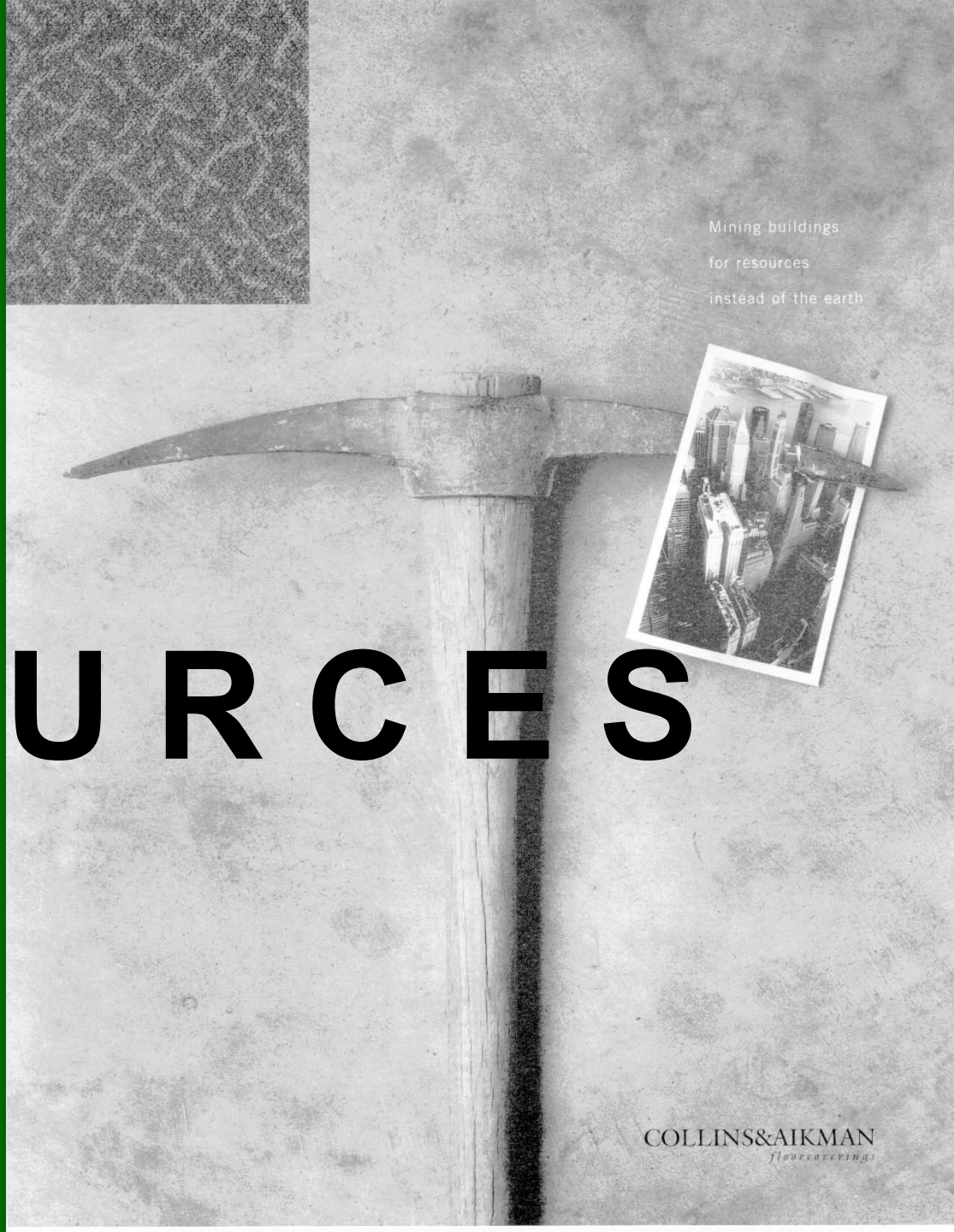




Mining buildings for

# RESOURCES

Instead of the Earth™



Mining buildings  
for resources  
instead of the earth

COLLINS&AIKMAN  
floorcoverings





# RECLAMATION



Theiss Elementary, TX



San Diego City S.D., CA



Tampa Bay Schools, FL







## 100% Recycled Content Backing



**CERTIFIED**

**MINIMUM 45% RECYCLED CONTENT**

This Powerbond® ER3® Modular Tile product contains a minimum of 7% post-consumer recycled carpet, with the balance from post-industrial carpet and plastic.

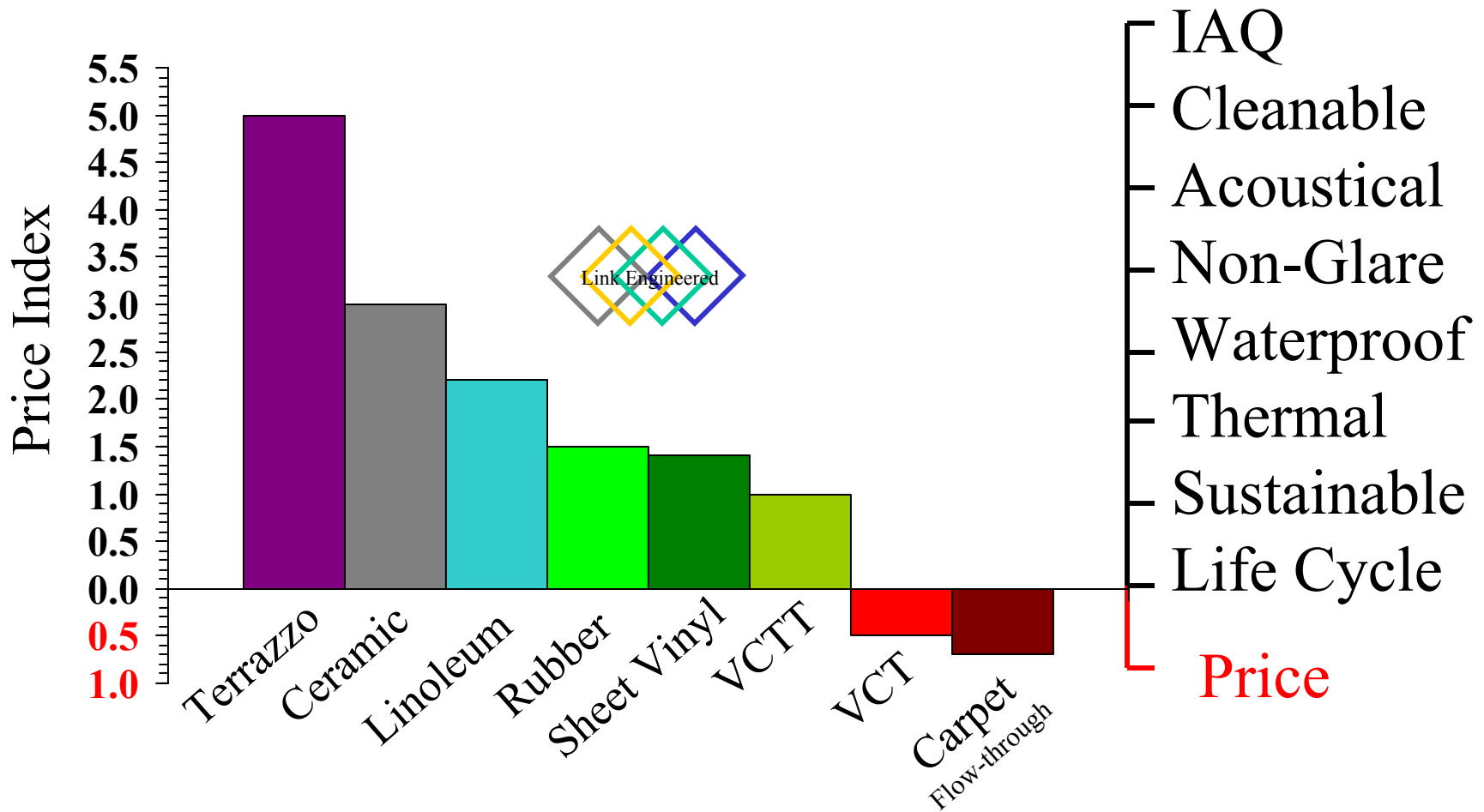
**SCIENTIFIC CERTIFICATION SYSTEMS 1-800-ECO-FACTS**



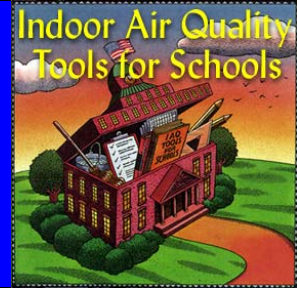
# ENVIRONMENTAL IMPACT

San Diego City S.D., CA	36,000 sft / 32,000 lbs.
Maryland Public Schools, MD	69,000 sft / 52,000 lbs.
Theiss Elementary School, TX	135,000 sft / 120,00 lbs.
Tampa Bay Schools, FL	270,000 sft / 240,000 lbs.
Houston Community College, TX	360,000 sft / 320,00 lbs.

# Are we solving the wrong problems?



# The Total Learning Environment



## Daylighting

- How do your flooring specifications impact **SIGHT** learning?

## Acoustics

- Have you considered **ACOUSTICS** in your flooring specifications?

## Thermal

- Can your flooring improve **THERMAL** comfort & **ENERGY** savings?

## Maintenance

- Does your flooring protect the overall **HEALTH** of the occupants?

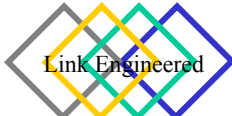
## IAQ

- Is **LINK ENGINEERING** part of your overall evaluation of flooring?

## Sustainable

- What **SUSTAINABLE** criteria meets the needs of the application?

# Floorcovering Application Chart

	<div>  </div>		
	H A R D S U R F A C E	V C T T	C A R P E T *
ENTRANCES	♦	♦	♦
CORRIDORS	◆ ◆	◆ ◆ ◆	◆
CLASSROOMS	◆	◆ ◆ ◆	◆
LIBRARY	◆	◆ ◆ ◆	◆ ◆
ADMINISTRATIVE AREAS	◆	◆ ◆ ◆	◆ ◆
COMPUTER ROOMS	◆	◆ ◆ ◆	◆ ◆
SPECIAL NEEDS CLASSROOMS	◆	◆ ◆ ◆	◆
MULTI-PURPOSE ROOMS	◆ ◆	◆ ◆	◆
ART ROOMS	◆ ◆ ◆	◆ ◆	◆
SCIENCE ROOMS	◆ ◆ ◆	◆	◆
CAFETERIA	◆ ◆ ◆	◆	◆
RESTROOMS	◆ ◆ ◆	◆	◆

◆ =Poor:

◆ ◆ =Good:

◆ ◆ ◆ =Excellent

♦ =Mat System

\*Flow through carpet





“We cannot lose sight of our clients needs,  
and we can never forget that our clients are our  
children.”

School Architect, AIA Conference



Tom Ellis

tellis@tandus.com

800.241.4902 x2680

